FACT SHEET

For Additional Information Contact:
Bureau of Medicine and Surgery MED26
2300 E Street NW
Washington, DC 20372-5300
Phone: 202-762-0472
Fax: 202-762-0976
Email: dmryan@us.med.navy.mil

Naval Aerospace Medical Research Laboratory

Pensacola, FL

The Naval Aerospace Medical Research Laboratory (NAMRL) dates back to 1939, when aeromedical research was a function of the Pensacola Naval Air Station Medical Department. Today, as a human performance laboratory focusing on problems in naval aviation, NAMRL plays an important and vital role in supporting fleet operations, aircrew selection, mission effectiveness, and aircraft design. The laboratory's programs emphasize research in spatial disorientation, motion adaptation, vision, hearing, personnel selection, ergonomics, and anthropometry. Facilities include acoustical, visual, vestibular, cognitive, and psychopharmacological laboratories, three mobile field laboratories, an engineering prototype building, and the world's finest collection of man-rated acceleration-research devices.

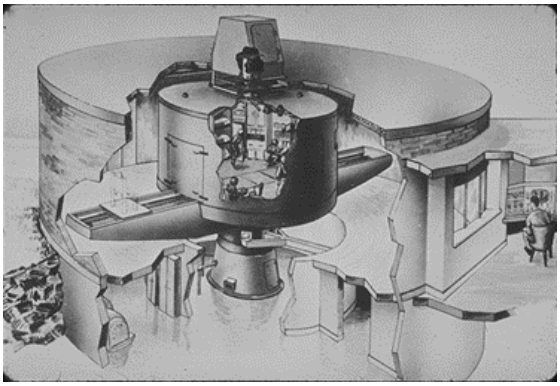
The staff at NAMRL is renowned in aviation medicine and environmental safety and includes specialists in psychology, physiology, neuroscience, biophysics, biomedical engineering, optometry, audiology, electrical engineering, mathematics, biology, and ophthalmology. Their research publications total over 2,000 scientific journal articles, technical reports, books, and symposia proceedings.

World Class Man-rated Acceleration Devices

The diverse missions of the Navy require Sailors and Marines to venture into a variety of motion-based environments that can adversely affect human performance. The two most significant problems created by unusual acceleration environments are spatial disorientation and motion sickness. For nearly 40 years, NAMRL researchers have designed, developed, and assembled the world's best collection of man-rated acceleration devices to study these problems with the generous support and cooperation of the Navy and NASA.

Acceleration-Related Devices

- Coriolis Acceleration Platform (right)
- Human Disorientation Device
- Visual Vestibular Sphere Device
- Pendular Inertial Gravitational Device
- Linear Angular Rotator
- Equitest System
- Variable-Position Litter Device
- Periodic Angular Rotator
- Off-Vertical Rotator
- Ocular CounterRoll Device
- Pate Device
- Mobile Filed Laboratory –Vestibular



The Coriolis Acceleration Platform, the only device in the world capable of applying combined linear and angular acceleration to human subjects. It is the only device in the DoD inventory available to study chronic exposure to altered G environments.

Research Areas

Spatial Orientation

- Scientists work with war fighters to enhance their capability to operate in complex visual and motion environments. Their goals are to determine human responses to visual and motion-induced stimuli and develop practical solutions to costly and sometimes tragic aviation accidents caused by spatial disorientation. Their research results will enhance safety and mission effectiveness for our land, sea, air, and space forces.
- Researchers and engineers are exploring ways to enhance pilot performance by simplifying the flight task. Their approach is to provide continuous, veridical spatial-orientation information via the under-utilized sensory channel of touch.

Aviation Selection

- Researchers are developing and evaluating, tests to improve the selection, classification, and retention of Navy and Marine Corps aircrew. The focus of these efforts has been on the selection of naval aviators, although significant benefits apply to the non-aviation community as well. Proper selection reduces attrition from training programs and associated costs, and places the most qualified students in training.

Operational Medicine

- Current hearing protection devices can be inadequate in high-noise operational environments. Scientists have developed and patented a new sound-attenuating technology that significantly improves hearing protection devices and sound attenuation in general. Eventual applications include aircrew helmets, cranials, and ship walls.
- Investigators have developed a passive dog tag that stores identification, diagnostic, treatment, and location information on individual service members. Called the Tactical Medical Coordination System, or TacMedCS, it is designed to track casualties from point of injury through transport and definitive care. The system should improve medical regulating significantly on battlefields of the future.

Visual Sciences

- After observing how pilots scan flight instruments, researchers developed a primary flight instrument display called OZ. The OZ is unique in that it presents all the primary flight instrument information to the pilot in a way that the visual system is predisposed to receive it. This compatibility between the visual system and the flight display results in several demonstrable, significant, and practical enhancements in flight performance over the traditional flight instrument displays.

Examples of Accomplishments

- Patented hearing protection technology
- Health risk appraisal of Naval Special Forces Personnel
- Pilot Prediction System
- New approaches to spatial disorientation
- Attention-directing flight instrument display
- Performance-based occupational strength testing
- USMC field casualty monitoring/tracking support
- Naval aviation selection tools
- Virtual Environment Displays
- Night Vision for Special Warfare

Examples of Operational Support

- Landing Craft Air Cushion Vehicle Navigator Selection System
- Repatriated Prisoner of War program
- Digital Anthropometric Video Imaging Device